



State of California—Health and Human Services Agency  
California Department of Public Health

KAREN L. SMITH, MD, MPH  
Director and State Public Health Officer



Gavin Newsom  
Governor

**DATE:** March 11, 2019

**TO:** Juanita Bacey  
Project Manager  
Brownfields and Environmental Restoration Program  
Department of Toxic Substances Control  
700 Heinz Avenue  
Berkeley, CA 94710-2721

**FROM:** Sheetal Singh  
Senior Health Physicist  
Emergency, Restoration & Waste Management Section  
Environmental Management Branch (EMB)  
California Department of Public Health (CDPH)  
1725 23rd Street, Suite 110  
Sacramento, California 95816

**SUB:** CDPH-EMB review of the Navy Response to Comments Issued February 28, 2019 for the FINAL *Rev 1 Radiological Characterization Surveys Work Plan, Parcel F Structures*, Hunters Point Naval Shipyard San Francisco, California. Issued November, 2018

As submitted by the California Department of Toxic Substances Control (DTSC), Environmental Management Branch (EMB) of the California Department of Public Health (CDPH) reviewed the Navy Response to Comments Issued February 28, 2019 for the FINAL *Rev 1 Radiological Characterization Surveys Work Plan, Parcel F Structures*, Hunters Point Naval Shipyard San Francisco, California, for radiological issues. This review was performed in support of the Interagency Agreement between DTSC and CDPH.

If you need further assistance please contact Shane Reese of my staff at (916) 210-8554 or via email at [Shane.Reese@cdph.ca.gov](mailto:Shane.Reese@cdph.ca.gov).



Activity: *Review Navy Response to Comments issued February 28, 2019 for FINAL Rev 1 Radiological Characterization Surveys Work Plan, Parcel F Structures*, Hunters Point Naval Shipyard San Francisco, California. Issued November 23, 2018.

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The Environmental Management Branch (EMB) of the California Department of Public Health (CDPH) appreciates the opportunity to review the submitted document, *Review Navy Response to Comments issued February 28, 2019 for FINAL Rev 1 Radiological Characterization Surveys Work Plan, Parcel F Structures*, Hunters Point Naval Shipyard San Francisco, California (November 2018).

#### **Specific Comments:**

1. Response to CDPH-EMB's General Comment 2:

CDPH-EMB's General Comment 2 dated January 24, 2019 requested the reclassification of survey units (SUs) investigated during this effort based on the Historical Radiological Assessment (HRA, 2004) and recent developments at the shipyard (i.e., Parcel A-1 Health and Safety surveys performed by CDPH-Radiologic Health Branch (RHB)).

Historical activities identify the storage of radioactive waste at these locations. Stored radioactive waste is/was subject to leaks and spills. Leaks and spills originating from waste have the potential to exist with radiological activities above reference area / background levels. However, these activities may be well below 5 micro-Curies ( $\mu\text{Ci}$ ) (i.e., please see Specific Comment 3). Furthermore, these leaks/spills can cause "small areas of elevated activity," like those stated to be unlikely in Section 5.1 of the current iteration of this report. Without detailed information diagramming storage locations of waste, OPERATION CROSSROADS activities, and other forms of identified potential sources of radioactive contamination a SU styled after a MARSSIM class 2 (or higher) provides greater confidence that all areas have been investigated thoroughly. The classification of SUs as MARSSIM class 3 does not provide the level of confidence, in the sampling effort, demanded by a site where residual radioactivity is repeatedly described as, "trace amounts." CDPH-EMB continues to request the reclassification of all SUs.

Adjustment to a MARSSIM class 1 or 2 SU will allow for systematic sampling. Systematic sampling affords a greater confidence in identification of smaller areas of elevated activity. Please refer to figure D.7 in Appendix D "The Planning Phase of the Data Life Cycle" of the MARSSIM manual.

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CDPH-EMB has requested this reclassification beginning with the first round of comments on the DRAFT report issued February 27, 2018. CDPH-EMB has yet to receive an adequate response to this request.

2. Response to CDPH-EMB's Specific Comment 4:

CDPH-EMB recognizes that, "the Navy is not requesting a recommendation for unrestricted radiological release [RURR] of Parcel F Structures at this time." However, the survey protocols, as currently detailed in *FINAL Rev 1 Radiological Characterization Surveys Work Plan, Parcel F Structures* is inadequate to meet the requirements of a scoping survey.

3. Response to CDPH-EMB's Specific Comment 6:

CDPH-EMB's Specific Comment 6 requested clarification on minimum detectable count rate (MDCR) calculations. The response specified that the MDCR calculations rely on an input of five (5) micro-curies ( $\mu\text{Ci}$ ), representing an intact deck marker. This approach is inadequate as the focus of the current work plan is to find any radiological contamination even trace amounts and not just intact deck markers.

Please note that the CDPH-RHB's health and safety survey effort was designed to identify immediate hazards to human health. The parameters used by RHB to develop their work plan are not applicable to the current work plan based on historical information of the Parcel F structures. Please see comment #1.

4. Response to CDPH-EMB's Specific Comment 12:

CDPH-EMB requested clarification of strontium-90 ( $^{90}\text{Sr}$ ) and plutonium-239 ( $^{239}\text{Pu}$ ) testing relationship (i.e., the reliance of  $^{239}\text{Pu}$  testing on a positive  $^{90}\text{Sr}$  result). The response is inadequate since it does not provide evidence that the two isotopes coexist in potential contamination. Since  $^{239}\text{Pu}$  is a radionuclide of concern (ROC), sampling efforts must be able to identify any elevated location. Sporadic alpha static measurements coupled with a 25%

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alpha scanning effort does not supply confidence that elevated  $^{239}\text{Pu}$  locations will be identified.

**From:** McCray, Sean-Ryan CTR NAVFAC PAC [sean-ryan.mccray.ctr@navy.mil]  
**Sent:** Thursday, February 28, 2019 3:20 PM  
**To:** 'Bacey, Juanita@DTSC' [Juanita.Bacey@dtsc.ca.gov]; Reese, Shane@CDPH [Shane.Reese@cdph.ca.gov]  
**CC:** Stoick, Paul T CIV NAVFAC SW [paul.stoick@navy.mil]; Robinson, Derek J CIV NAVFAC HQ, BRAC PMO [derek.j.robinson1@navy.mil]  
**Subject:** RE: HPNS Parcel F Work Plan Comments: Request for Clarification  
**Attachments:** RTC - F R1 WP Parcel F\_2019\_02\_20.pdf

Hi Nina, hope all is well.

Attached you'll find the RTC's for The Parcel F Scoping Survey Work Plan. The Parcel F Work Plan is being finalized based on these attached RTC's.

As always, thanks for your input. I look forward to continuing to work with you.

Best,

Sean-Ryan McCray  
Environmental Engineering Support II  
Contractor, Navy BRAC PMO West  
San Diego, CA 92147  
Direct: (619) 507-2949

-----Original Message-----

From: Bacey, Juanita@DTSC <Juanita.Bacey@dtsc.ca.gov>  
Sent: Wednesday, February 27, 2019 10:32 AM  
To: McCray, Sean-Ryan CTR NAVFAC PAC <sean-ryan.mccray.ctr@navy.mil>  
Cc: Stoick, Paul T CIV NAVFAC SW <paul.stoick@navy.mil>; Reese, Shane@CDPH <Shane.Reese@cdph.ca.gov>  
Subject: [Non-DoD Source] RE: HPNS Parcel F Work Plan Comments: Request for Clarification

Hi Sean,  
I'm just checking in to see where things are on the Parcel F Work Plan. As you know, CDPH is not able to accept the current document. Will we be getting response to their last comments, or a revised doc? Or perhaps we need to have a conference call? Just let me know. Thx.

Nina

-----Original Message-----

From: Bacey, Juanita@DTSC  
Sent: Wednesday, February 06, 2019 4:34 PM  
To: 'McCray, Sean-Ryan CTR NAVFAC PAC' <sean-ryan.mccray.ctr@navy.mil>

Subject: RE: HPNS Parcel F Work Plan Comments: Request for Clarification

Oops. See attached.

-----Original Message-----

From: McCray, Sean-Ryan CTR NAVFAC PAC

[mailto:sean-ryan.mccray.ctr@navy.mil]

Sent: Wednesday, February 06, 2019 3:39 PM

To: Bacey, Juanita@DTSC <Juanita.Bacey@dtsc.ca.gov>

Subject: FW: HPNS Parcel F Work Plan Comments: Request for Clarification

Hi Nina,

I think there's a chance you forwarded the completed version of these comments to my alternate contractor email address that I no longer have access to. Would you mind forwarding to this Navy email address?

Thanks in advance,

Sean-Ryan McCray

Environmental Engineering Support II

Contractor, Navy BRAC PMO West

San Diego, CA 92147

Direct: (619) 507-2949

-----Original Message-----

From: McCray, Sean-Ryan CTR NAVFAC PAC

Sent: Tuesday, February 5, 2019 2:30 PM

To: 'Bacey, Juanita@DTSC' <Juanita.Bacey@dtsc.ca.gov>

Cc: Stoick, Paul T CIV NAVFAC SW <paul.stoick@navy.mil>

Subject: HPNS Parcel F Work Plan Comments: Request for Clarification

Hi Nina,

Hope all is well. I'm following up with the voicemail I left you today, Tuesday 02.05.19. We are in the process of reviewing the most recent CDPH EMB RTC's and in doing so discovered that one of the comments is incomplete. Please see attached for details. Comment 6, Part A, Paragraph 1 looks to have been cut short. Can you please clarify or complete the comment at your earliest convenience?

Thanks in advance,

Sean-Ryan McCray

Environmental Engineering Support II

Contractor, Navy BRAC PMO West

San Diego, CA 92147

Direct: (619) 507-2949

**Response to Comments on the *Final Revision 1 Radiological Characterization Surveys Work Plan, Parcel F Structures, Hunters Point Naval Shipyard, San Francisco, California, November 2018, DCN: APTM-0006-4550-0025.R1/F***

*Comments by: Sheetal Singh, Senior Health Physicist, CDPH, comments dated January 24, 2019*

General Comment	Response
<p><b>1.</b> The California Department of Public Health - Environmental Management Branch (CDPH-EMB) utilizes the California Code of Regulations (CCR), Title 17, Section 30256(k), which requires:</p> <ul style="list-style-type: none"> <li>a) Radioactive material be properly disposed;</li> <li>b) A reasonable effort has been made to eliminate residual radioactive contamination;</li> <li>c) A radiation survey has been performed which demonstrates that the premises are suitable for release for unrestricted use.</li> </ul> <p>In practice this means employing the decision making process outlined in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM, NRG et al, 1997), which includes establishing a reference background area for each of the materials to remain in situ. These reference background measurements are then compared to survey units (SUs).</p>	<ul style="list-style-type: none"> <li>a. Work Plan Section 4.6, Waste Management Plan, states the following: “A WMP was prepared to allow for proper storage, characterization, and disposal of liquid and solid waste generated during the field activities. This plan addresses management, anticipated stockpiling, handling/transportation, and disposal of the non-radioactive waste streams derived during the fieldwork. The WMP is included as Appendix C. APTIM will not dispose of radioactive waste. Radioactive material, if any, that is identified during field activities will be collected, segregated, and stored in appropriate containers per the RPP (APTIM, 2017b) for subsequent packaging and disposal by a certified waste broker under the direction of the Navy LLRW Disposal Program.”</li> <li>b. The survey areas have been classified as Class 3 area with little or no potential for residual radioactivity. Work Plan Section 7.5, Waste Management, states “Any investigation derived waste will be managed in accordance with the WMP (Appendix C).”</li> <li>c. Work Plan Section 9.0, Reporting Requirements, describes how the results of surveys implemented using this Work Plan will be documented.</li> </ul> <p>As stated in Work Plan Section 5.3.1 “The reference area behind Building 810 (Figure 1) will be used to establish gamma instrument-specific investigation levels (ILs). Reference data will be collected in similar matrix (i.e., concrete pad, wood, metals). If needed, additional reference areas may be established with the approval of the Navy.”</p> <p>Please also see the response to California Department of Public Health (CDPH) General Comment 1, dated May 16, 2018.</p>
<p><b>2.</b> CDPH-EMB requests an elevated classification of the Survey Units (SUs) based on the Historical Radiological Assessment (HRA, 2004) identified activities, and recent developments at locations on Hunters Point Naval Shipyard previously identified as "unlikely" or "non-impacted". Raising the classification will adjust SU size and switch sampling efforts from random</p>	<p>The Department of the Navy (Navy) is performing a Class 3 survey based on the findings and recommendations included in the <i>Final Historical Radiological Assessment Volume II, History of the Use of General Radioactive Materials, 1939–2003, Hunters Point Shipyard, San Francisco, California</i> (HRA; Naval Sea Systems Command, 2004). The HRA recommended scoping surveys of Drydocks 5, 7, and ship berths</p>



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<p>locations to a systematic grid. This will promote confidence in the scoping effort through greater statistical assurance.</p>	<p>(Parcel F finger piers), and review of the final status survey report for Drydock 6. The Navy is not requesting a recommendation for unrestricted radiological release (RURR) at this time. Therefore, a Class 1 survey is not warranted.</p> <p>The Class 3 survey will include 100 percent gamma scans and 25 percent alpha/beta scans of accessible surfaces, and static measurements at random locations per survey unit. The surface scan coverage specified in the Work Plan is beyond the Class 3 survey recommended survey coverage outlined in <i>Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)</i>, which has no minimum requirement for surface scan coverage for Class 3 surveys.</p> <p>Furthermore, as stated in the Work Plan, if radiological contamination is discovered during this Class 3 survey, the Navy will resurvey the Parcel F structures as a Class 1 survey.</p>
<p><b>3.</b> It is the understanding of CDPH-EMB that the intent of this project is to perform a MARSSIM style scoping survey. If CDPH-EMB is correct in its understanding, please adjust the title and content of this document to reflect a scoping survey rather than a characterization survey.</p>	<p>The work plan title and content were revised to reflect a scoping survey rather than a characterization survey.</p>

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Specific Comment	Response
<p>4. <u>Section 1.0 ("Introduction")</u>, Page 1-1, Paragraph 5, Last full sentence on page: "The objective of this Work Plan is to describe radiological characterization surveys designed to provide results with sufficient quantity and quality to meet the requirements of a final status survey and achieve unrestricted release for Parcel F structures." It is the understanding of CDPH-EMB that unrestricted release is no longer sought. Please clarify the goal of this project. Also, please refer to comment #3.</p>	<p>The paragraph was revised as follows:</p> <p>"The objective of this Work Plan is to describe radiological <u>scoping</u> surveys designed to provide results with sufficient quantity and quality to meet the requirements of a final status survey. <u>The data will be presented in reports and used to support future site decisions for Parcel F structures.</u> The Parcel F structures include the submarine pens (Drydocks 5, 6, and 7 and associated Ship Berths 61, 62, 63, and 64; Figure 2) and the finger piers (Finger Piers 1, 2, and 3 and associated Ship Berths 23 through 28, 30 through 35, and 37 through 42; Figure 3). <u>The Navy is not requesting a recommendation for unrestricted radiological release of the Parcel F structures at this time.</u>"</p>
<p>5. <u>Section 5.4.5 ("Step Five - Develop a Decision Rule")</u>, Page 5-4, First sentence: "If the mean results of the survey are consistent with the release criteria (Table 1), the data will be used to support free release of the structures." Please refer to General Comment # 1.</p>	<p>The sentence was revised as follows:</p> <p>"If the results of the survey are consistent with the release criteria (Table 1), the data <u>will be presented in reports and used to support future decisions for the Parcel F structures.</u>"</p> <p>The SAP text was also revised to be consistent.</p>
<p>6. <u>Section 5.5.2 ("Gamma Surface Scan Minimum Detectable Concentration")</u>, Pages 5-6 and 5-7, First sentence:</p> <p>a. "The gamma surface scan MDC was determined for identifying intact deck markers containing <sup>226</sup>Ra or <sup>90</sup>Sr attached to the surface being investigated (Appendix D)." The HRA does not list deck markers as a contaminant of concern for the structures. Furthermore, the last sentence of the first paragraph of Section 2.3 states, "However, it is more likely traces of radioactivity from damaged, discarded, or lost devices could be present on surfaces associated with the Parcel F structures, although the probability of residual radioactivity from radioluminescent devices is still low." Additionally, Section 2.3 ("Nature and Extent of Contamination"), Page 2-3, Sentences 5-7 states, "Radioactive wastes were typically sealed in drums or other packages for transport, and may have been staged on piers or alongside ship berths prior to loading the waste onto barges. The potential for residual radioactivity at the submarine pens and piers from leaking waste packages is low." Both of</p>	<p>a. These gamma scan surveys are performed to demonstrate there are no sources of gamma radiation exceeding background that could impact the radiological health and safety of the public and the environment. The only discrete sources of gamma radiation found at HPNS to date have been <sup>226</sup>Ra deck markers; therefore, these discrete sources form the basis of this survey. The minimum detectable count rate (MDCR) was calculated using the same basis the California Department of Public Health (CDPH) used in the recent Parcel A scan, which was also performed to demonstrate there were no sources of gamma radiation exceeding background that could impact the radiological health and safety of the public and the environment (<i>Hunters Point Shipyard Parcel A-1 Health and Safety Survey Work Plan</i>, CDPH Radiologic Health Branch, dated July 3, 2018). The MDCR was used to calculate the selected maximum scan speed of one meter per second (m/s), which is the same scan speed used by CDPH to survey Parcel A, based on the <i>Technical Basis Document, CA Radiologic Health Branch, RS-701</i></p>

**Response to Comments on the *Final Revision 1 Radiological Characterization Surveys Work Plan, Parcel F Structures, Hunters Point Naval Shipyard, San Francisco, California, November 2018, DCN: APTM-0006-4550-0025.R1/F***

*Comments by: Sheetal Singh, Senior Health Physicist, CDPH, comments dated January 24, 2019*

<p>these origins of contamination tend to yield activities lower than 5 micro-curies.</p> <p>Using the current iteration of the report (i.e., the SUs classified, as MARSSIM class 3), the MDCR values presented in Appendix D are not understood. Please explain the choice of intact deck markers as the sole input to the MDCR calculations.</p> <p>b. Please clarify how the 5 micro-Curie (μCi) activity was determined to be appropriate for use in MDCR calculations.</p> <p>c. Please explain how the discussed MDCRs are capable of detecting the Derived Concentration Guideline level (DCGL).</p>	<p><i>Radiation Mapping System</i> (CDPH, 2010). The Parcel F Class 3 survey includes both a 25 percent alpha/beta survey and a 100 percent gamma survey.</p> <p>b. The 5 microcurie activity is equivalent to an intact deck marker. See response to a. above for the justification for use of deck marker to calculate the MDCR.</p> <p>c. The alpha and beta scans performed as part of the MARSSIM survey are capable of detecting the radionuclides of concern at the project at concentrations below the release criteria listed in Table 1 as presented in Work Plan Section 5.5.5 for scans and Section 5.5.6 for static measurements.</p>
<p><b>7. <u>Section 5.5.6 ("Alpha Beta Static Minimum Detectable Concentration"), Page 5-8. Paragraph 3, Sentence 1:</u></b></p> <p>"Two-minute static measurements will be performed when using the Ludlum Model 43-3." Please correct the Ludlum Model type to "43-37."</p>	<p>The typo was corrected.</p>
<p><b>8. <u>Section 5.6 ("Gamma Count Rate Surveys"), Page 5-9, Paragraph 1. Last sentence:</u></b></p> <p>a. "The data collected during the gamma scan are evaluated and if all readings are below the instrument specific gamma scan IL, or otherwise do not indicate the presence of an anomaly (e.g., via Z-score analysis, spatial plots, or other statistical analysis), the second stage is not required." Please clarify how it is acceptable that scan results exhibiting measurements above the IL, but acceptable "via either Z-score analysis, spatial plots, or other statistical analysis" will not be investigated further?</p> <p>b. <u>Paragraph 2:</u> Please clarify when an anomalous scan result will trigger characterization of the anomaly (including isotopic identification).</p>	<p>a. Agree with comment. All locations exceeding the investigation level will be investigated. Section 5.6 was revised to delete the following text:</p> <p><del>"...or otherwise do not indicate the presence of an anomaly (e.g., via Z-score analysis, spatial plots, or other statistical analysis)..."</del></p> <p>Section 5.3.2 was also revised in response to this comment. The section title was retitled "Concrete Background Area" and revised so that reference area background data for each gamma instrument will still be collected from behind Building 810, but not to establish investigation levels. This data will be collected for comparison purposes as needed. New Section 5.3.3, "Survey Investigation Levels," was added to state the investigation levels for each instrument will be established as the mean of the survey data plus 3 standard deviations.</p> <p>b. Agree with comment. Section 5.6 was revised to delete the following text:</p> <p><del>"...or indicates that further investigation is warranted..."</del></p>
<p><b>9. <u>Section 5.7.2: ("Alpha and Beta Static Measurements"), Page 5-10, Paragraph 5, Sentence 2:</u></b></p>	<p>Section 5.7.2 was revised as follows:</p>

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<p>"Fifty-four two-minute static measurements will be collected .at random locations within each SU." According to Section 5.5.6 ("Alpha Beta Static Minimum Detectable Concentration"), Paragraph 3, Sentence 2: "Five-minute static measurements will be performed when using the Ludlum Model 43-68." Please clarify this in Section 5.7.2.</p>	<p>"The survey design requires the performance and evaluation of data from static measurements performed at random locations across each SU. Fifty-four static measurements will be collected at random locations within each SU. <u>The static measurements will be two minutes when using the Ludlum Model 43-37 and five minutes when using the Ludlum Model 43-68, as discussed in Section 5.5.6.</u> The random locations will be selected through the use of a map and random number generator. Any location that exceeds the IL will be marked with paint and further investigated."</p>
<p><b>10. Section 7.1.1 ("Gamma Scan Surveys"), Page 7-1, Paragraph 5, Sentence 2:</b> "The Finger Pier subsurface areas are not considered impacted based on the site history (see sections 2.2 and 2.3 of this Work Plan)." These sections do not discuss manholes, grates, or subsurface areas. Please provide the basis of the assumption that these subsurface areas do not require investigation or characterization prior to potential unrestricted release and public access.</p>	<p>Agree with comment. The source of residual radioactivity on the Finger Piers is staging of radioactive waste on the piers prior to disposal. Therefore, the horizontal surfaces where radioactive waste may have been be staged are impacted. Similarly, ships with radioactive deck markers could have brushed against the pier leaving trace amounts of radioactivity. Therefore, the exterior edges of the finger piers are considered impacted. The accessible edges of all penetrations through the Finger Piers (including manholes, grates, access ports, etc.) will be included as part of the 25% of the surfaces that are scanned for alpha/beta activity to check for contamination migrating from the impacted areas to the non-impacted areas.</p> <p>Section 2.3, last paragraph, was revised to include the following sentence:</p> <p><u>"Residual radioactivity also could have migrated from horizontal surfaces of the submarine pens and finger piers to subsurface areas such as manholes, grates, and access ports."</u></p> <p>Section 7.1.1, Paragraph 5, was revised as follows:</p> <p>"The <u>accessible edges</u> of the Finger Pier manholes and metal grate areas will be accessed during the gamma scan surveys (see Photo 2)."</p> <p>Section 7.1.2, Paragraph 2, 1st sentence, was be revised as follows:</p> <p>"Manholes, grates, and components of the suction and discharge system will be investigated during the survey of Drydocks 5, 6, and 7 <u>and Finger Piers 1, 2, and 3.</u>"</p> <p>Section 5.7.1 was also revised to include the accessible edges of all penetrations through the finger piers (including manholes, grates, access</p>

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	<p>ports, etc.) as part of the 25% of the surfaces being scanned for alpha/beta activity.</p> <p>Further, the Work Plan was revised to state the Navy is not requesting a recommendation for unrestricted radiological release of the Parcel F structures at this time.</p>
<p><b>11. <u>Section 7.1.2 ("Alpha and Beta Surveys"), Page 7-4. First Full Paragraph. Sentence 3 to the end of the paragraph:</u></b></p> <p>These sentences continuously state that two-minute static measurements will be collected. However, as addressed in Specific Comment # 9, statics collected using the Ludlum 43-68 should be five minute integrated counts.</p>	<p>Section 7.1.2 was revised as follows:</p> <p>“The alpha/beta static measurements will be performed using portable contamination survey instruments specifically, the Ludlum Model 43-37 gas flow proportional “floor monitor” detector (or equivalent) coupled with a Ludlum Model 2360 scaler/ratemeter (or equivalent) (Table 4). If required, a Ludlum Model 43-68 gas flow proportional detector (or equivalent) small area detector may be used to perform static measurements in areas not accessible to the Ludlum Model 43-37 large area detector (Table 4). The scaler/ratemeter will be set to a two-minute count time <u>when using the Ludlum Model 43-37 or a five-minute count time when using a Ludlum Model 43-68.</u> At the start of each measurement, the RCT will position the detector, and begin the two-minute <u>or five-minute</u> count. At the completion of each two-minute <u>or five-minute</u> count (<u>depending on the instrument used</u>), the alpha and beta result will be recorded. The IL for the alpha and beta static measurements will be developed and used as described in the decision rules in Section 5.4 of this Work Plan. The release criteria were established from the AM (Navy, 2006) and are presented in Table 1.</p> <p>Two minute <u>or five-minute (depending on the instrument used)</u> static measurements will be collected at 54 random locations per SU as discussed in Section 5.7 of this Work Plan, and as part of investigations of scanning results exceeding the IL, as needed. Smears will be collected at each location where a total alpha and total beta static reading is taken. Smears may be qualitatively field checked to identify gross contamination with the Ludlum Model 2360 with a Ludlum Model 43 68 (or equivalent) detector. This will assist in identifying the extent of removable contamination. Smears will be quantitatively counted with a Ludlum Model 2929 or Ludlum Model 3030 sample counter located at the APTIM project office.”</p>

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**12. Appendix A - Sampling and Analysis Plan, Section 17.1 ("Biased Radiological Characterization Sampling"), Page 44. Last Paragraph, Sentence 4 :**

"If <sup>90</sup>Sr is detected above release criteria, then additional analysis for <sup>239</sup>Pu or other alpha emitters may be performed to confirm contamination." Please explain the use of <sup>90</sup>Sr as a trigger for <sup>239</sup>Pu analysis.

If strontium-90 (<sup>90</sup>Sr) is detected above the release criterion, the additional plutonium and other alpha emitter analysis is performed to verify if the detected <sup>90</sup>Sr is related to OPERATION CROSSROADS. This additional analysis supports complete characterization of beta activity detected above the release criteria.